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EXAMINER

THOMAS, MIA M

ART UNIT

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2624

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

1. This Office Action is made responsive to applicant's remarks received on 23 April 2008. The remarks/arguments are responsive to the Office Actions mailed on 16 November 2007 and 29 January 2008. The Office Action of January 29, 2008 does not indicate that the previous Office Action has been withdrawn. Therefore, applicant responds to both Office Actions.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections - 37 CFR 1.75(d) (1)

3. The following is a quotation of 37 CFR 1.75(d)(1):

The claim or claims must conform to the invention as set forth in the remainder of the specification and the terms and phrases used in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description.

4. Claim 8 is objected to under 37 CFR 1.75(d) (1), as failing to conform to the invention as set forth in the remainder of the specification.

As recited, it appears that the applicant intended to strike through the word "an" at line 1 of Claim 8. As recited, currently amended, the claim reads: **A method of determining the living character of an a finger of a user...**

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Examiner believes that this amendment has a typographical error and it was applicant's intent to recite the claim as follows, which will also be assumed for examination purposes: **A method of determining the living character of a finger of a user...**

Similarly, the Examiner was able to reasonable draw this conclusion based upon the preamble of independent claim 11 which recites equivalent claimed subject matter.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 8-14 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- For example, Claim 8 recites the limitation "*the living character*" at page 2, line 1 of claim 8. There is insufficient antecedent basis for this limitation in the claim.

Examiner considers this statement to be best understood by way of the following for the preamble: "A method of determining **a living character** ...carrying a fingerprint..."

The remaining claims 9-10 are rejected on the same grounds for the same reasons.

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- Claim 10 also recites the limitation "*the impedance*" at page 2, line 2 of claim 10. There is insufficient antecedent basis for this limitation in the claim.

Similarly with regards to Claim 11, Claim 11 recites the limitation "*the living character*" at page 8, line 1 of claim 11. There is insufficient antecedent basis for this limitation in the claim.

Examiner considers this statement to be best understood by way of the following for the preamble of Claim 11:

"A fingerprint sensor adapted to determine **a living character** ~~of an element~~ a finger. of a user carrying a fingerprint placed on a sensor, the sensor comprising:..."

- Claim 11 (d) also recites the limitation "*a particular characteristic*" at page 3, line 9 of claim 11. There is insufficient antecedent basis for this limitation in the claim.

The remaining claims 12-14 are rejected on the same grounds for the same reasons.

With regards to element (d) as currently amended at claims 8 and 11 respectively, the Examiner is uncertain what the "a particular characteristic" is that is being deduced and judged acceptable.

For examination purposes, the Examiner will interpret Claim 8 and 11 to reasonable read as follows: "deducing a range of acceptable electrical values for a fingerprint having a certain characteristic"

Claim Rejections - 35 USC § 103

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
8. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muramatsu et al. (US 6,888,956 B2) in combination Derakshani et al. "Determination of vitality form a non-invasive biomedical measurement for use in fingerprint scanners" Pattern Recognition, 36 21 December 2001, pages 383-396 and Nysaether et al. (US 2005/0069178 A1).

Regarding Claims: 1 - 7 (canceled)

Regarding Claim 8: As best understood by the Examiner, Muramatsu teaches: A method of determining a living character of an ~~element~~a finger, of a user carrying a fingerprint and said finger being placed on a fingerprint sensor having an optical system ("The present invention relates to an optical fingerprint authentication apparatus." at column 1, line 8; performs a judgment as to whether the pattern is living fingerprint (of a person) or a non-living fingerprint (replica)." at column 4, line 32); the method comprising the steps of:

[[[c)]] (b) taking an image of the fingerprint carried by the ~~element~~finger by means of the optical system ("The present invention acquires an image of an object (finger) using an optical image sensor having infrared sensitivity to sense light scattered or reflected from the object, and in doing so acquires an image (fingerprint pattern) of the object, determines the clarity thereof, and performs a judgment as to whether the pattern is living fingerprint (of a person) or a non-living fingerprint (replica)." at column 4, line 32);

[[[d)]] (c) measurement of a particular characteristic of the image (Refer to Figure 8, numeral S2, for clarity, Examiner is stating that any "particular characteristic" of measurement of the image of a fingerprint is synonymous with minutiae and one of ordinary skill in the art would easily construe the same logic as conveyed at Figure 8, numeral S2).

Muramatsu does not specifically teach/disclose means of measuring an electrical quantity of the finger; measurement of a particular characteristic of the image; deducing of a range of values for the electrical quantity of the finger judged in principle acceptable using a relationship established between values of a particular characteristic of the image and a range of said values of the electrical quantity of the finger judged acceptable; validating the living character of the finger when the measured electrical quantity belongs to the deduced range.

Derakshani teaches (a) means of measuring an electrical quantity of the ~~element~~finger:

("Fingerprint scanners use different mechanisms for capturing the fingerprint, including ultrasonic imaging, pressure sensor arrays, optical imaging and capacitive proximity sensor arrays. These sensors are exposed to direct fingerprint contact." at page 384, right column, Section 2.3 "Fingerprint Scanner"). Also refer to page 384,

[[[d)]] (c) measurement of a particular characteristic of the image (Refer to page 384, left column, Section 2.2 "The Skin"; "The most important electrical characteristic of skin are impedance and capacitance, where the skin can be modeled as a matrix of parallel resistors and capacitors.")

(d) [[and]] deducing of a range of values [[from]] for the electrical quantity of the finger judged in principle acceptable using a relationship established between values of a particular characteristic of the image and a range of said values of the electrical quantity of the finger judged acceptable; (Refer to page 385, Section 5, "The Algorithm", specifically steps 6-13 at page 386. For clarity, the Examiner is stating that the deduction of values is further defined at steps 6 and 7, left column, page 386. Further, the relationship of established valued of a particular characteristic, herein this reference, namely impedance, (as stated at page 384, Section 2.2, left column, paragraph 3) the Examiner is stating that the characteristics of the acceptable values is produced at steps 9-11.

~~(e) validation of validating the value of the electrical quantity measured if this measurement is situated in the range~~ the living character of the finger when the measured electrical quantity belongs to the deduced range (Refer to Step 13, at page 386, right column, further at page 393, Section 6-"Results", paragraph 2, left column and Figure 14.)

Although Muramatsu and Derakshani in combination disclose/teach all the claimed elements, Nysaether explicitly defines the claimed elements of "means of measuring an electrical quantity of the element-finger".

Nysaether teaches (a) means of measuring an electrical quantity of the element-finger; ("This is obtained by a sensor as stated above and which is characterized in that it comprises a number of conductive structures at or directly below the sensor surface, said conductive structures consisting of at least one stimulation or current sink electrode and a number of sensor elements coupled to interrogation electrodes in an electronic circuit for measuring impedance between the

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electrodes and said at least one stimulus electrode, the sensor device also comprising at least one additional electrode being positioned in the vicinity of said sensor elements and being coupled to a chosen voltage." at paragraph [0009]; "This invention relates to sensor device for performing measurements on an at least partially conductive surface, specially a sensor geometry to facilitate AC capacitive fingerprint measurements on wet and dry fingers." at paragraph [0001]). For clarity, the Examiner is stating that a capacitive fingerprint surface is an electrical quantity, and further this paragraph exemplifies the measurement is that of a wet or dry finger.

Muramatsu, Derakshani and Nysaether are combinable because they are in the same field of sensory measurement for personal identification, specifically, fingerprint authentication.

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to combine the claimed elements as taught by Muramatsu, Derakshani and Nysaether.

All the claimed elements were known in the prior art at the time and the skilled artisan could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention. Specifically, "However, since the underlying mechanisms for static and dynamic measures are different, a combination of all these measures provides better precision than any of the individual measures." (at Section 6, "Results", Derakshani)

Therefore, it would have been obvious to the skilled artisan to combine the teachings/disclosure of Muramatsu, Derakshani and Nysaether to obtain the specified claimed elements of Claim 8.

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Regarding Claim 9: (previously presented) Muramatsu teaches the particular characteristic is selected from the group consisting of: the contrast of the image, the average grayscale of the image, the width of the images of the ridges formed by the said fingerprints, and the average grayscale of the ridges (Refer to Figure 8, numeral S2, for clarity, Examiner is stating that any "particular characteristic" of measurement of the image of a fingerprint is synonymous with minutiae and one of ordinary skill in the art would easily construe the same logic as conveyed at Figure 8, numeral S2; "In a general fingerprint comparison apparatus, when a fingerprint is input using an image sensor, a recognition section performs image processing of the fingerprint, and detects characteristic points of the fingerprint, these being known as minutiae." at column 1, line 35).

Regarding Claim 10: (previously presented) Nysaether teaches the electrical quantity is the impedance whose value is measured at the terminals of electrodes that the sensor has ("One problem for capacitive fingerprint sensors is that the finger conductivity (both resistive and AC capacitive) vary strongly with the humidity of the finger. For dry fingers, the result may be that the outer part of the skin (stratum corneum) has a higher impedance (lower capacitance) than the sensor dielectric, so tat the combined series capacitance is dominated by the finger impedance. This ridge may then seem more like a valley than like a ridge." at paragraph [0005]).

9. Claims 11-13 as best understood by the Examiner are rejected under 35 U.S.C. 103(a) as being unpatentable over Nysaether et al. (US 2005/0069178 A1) in combination Derakshani et al. "Determination of vitality form a non-invasive biomedical measurement for use in

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fingerprint scanners" Pattern Recognition, 36 21 December 2001, pages 383-396 and Muramatsu et al. (US 6,888,956 B2).

Regarding Claim 11: As best understood by the Examiner, (currently amended) Nysaether teaches: a fingerprint sensor adapted to determine the living character of an ~~element-a~~ finger, of a user carrying a fingerprint, said finger being placed on the sensor, ("This invention relates to sensor device for performing measurements on an at least partially conductive surface, especially sensor geometry to facilitate AC capacitive fingerprint measurements on wet and dry fingers." at paragraph [0001]), the sensor comprising:

Derakshani teaches (a) means of measuring an electrical quantity of the ~~element~~ finger; ("Fingerprint scanners use different mechanisms for capturing the fingerprint, including ultrasonic imaging, pressure sensor arrays, optical imaging and capacitive proximity sensor arrays. These sensors are exposed to direct fingerprint contact." at page 384, right column, Section 2.3 "Fingerprint Scanner"). Also refer to page 384.

(c) means for measuring a particular characteristic of the image thus ~~taken~~; (Refer to page 384, Section 2.3 "Fingerprint Scanner", "Each sensor's measured capacitance is translated into a grayscale level in the corresponding bitmap image of the captured fingerprint through a special circuitry. If the skin in contact with the sensor is moist, then, because of very high dielectric constant of sweat, the underlying sensor will yield a much higher capacitance, resulting in a darker (saturated) spot on the captured image. This feature makes these scanners specifically suitable for detection of perspiration.")

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(d) means ~~for establishing~~ ~~[[the]]~~ of deducing a range of values for the electrical quantity judged in principal acceptable using a relationship established between values of ~~[[a]]~~ the particular characteristic of the image and a range of values of the electrical quantity of the finger judged acceptable; (Refer to page 385, Section 5, "The Algorithm", specifically steps 6-13 at page 386. For clarity, the Examiner is stating that the deduction of values is further defined at steps 6 and 7, left column, page 386. Further, the relationship of established valued of a particular characteristic, herein this reference, namely impedance, (as stated at page 384, Section 2.2, left column, paragraph 3) the Examiner is stating that the characteristics of the acceptable values is produced at steps 9-11. For example, refer to Figures 3 and 4, further refer to Section 5.2 "Detailed Description" additionally, refer to pages 388-393, specifically, "Static Measure" at page 388.

~~[[f]]~~ (e) means of validating the living character of the finger when the measured value of the electrical quantity of the finger measured ~~if this measurement is situated in the range belongs to the deduced range.~~ (Refer to Step 13, at page 386, right column, further at page 393, Section 6-"Results", paragraph 2, left column and Figure 14.)

Muramatsu teaches ~~[[c]]~~(b) an optical system for taking an image of the fingerprint carried by the ~~element~~ finger by means of the optical system (Refer to Figure 2; "FIG. 2 is a drawing showing the configuration of a second embodiment of a fingerprint authentication apparatus according to the present invention. In this fingerprint authentication apparatus, rather than using a prism and lens or such optical components, and in contrast to an optical fingerprint authentication apparatus in which a finger is brought into direct contact with an optical image sensor, an

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infrared light source 22 and an optical image sensor 23 having the infrared sensitivity are used, similar to the case of the first embodiment." at column 6, line 46);

Nysaether, Derakshani and Muramatsu are combinable because they are in the same field of sensory measurement for personal identification, specifically, fingerprint authentication.

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to combine all the claimed elements as taught by Nysaether, Derakshani and Muramatsu.

The suggestion/motivation for combining the claimed elements of Nysaether, Derakshani and Muramatsu is to "detect perspiration patterns over the fingertip skin to identify the vitality of a fingerprint. Mapping the two-dimensional fingerprint images into one-dimensional signals, two ensembles of measures, namely static and dynamic measures, are derived for classification. Static patterns as well as temporal changes in dielectric mosaic structure of the skin, caused by perspiration, demonstrate themselves in these signals. Using these measures, this algorithm quantifies the sweating pattern and makes a final decision about vitality of the fingerprint by a neural network trained by examples." at abstract, Derakshani.

The suggestion/motivation for teaching a means of validating the value of the electrical quantity measured if this measurement is situated a range would also be "to narrow the identity of the enrolled user and to expose the authentication of the potential user as being genuine or counterfeit."

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All the claimed elements were known in the prior art at the time and the skilled artisan could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention. Specifically, "However, since the underlying mechanisms for static and dynamic measures are different, a combination of all these measures provides better precision than any of the individual measures." (at Section 6, "Results", Derakshani)

Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Nysaether, Derakshani and Muramatsu to obtain the invention as specified in Claim 11.

Regarding Claim 12 (previously presented): Nysaether teaches wherein the particular characteristic is selected from the group consisting of: the contrast of the image, the average grayscale of the image, the width of the images of the ridges formed by the said fingerprints, and the average grayscale of the ridges ("For wet fingers, where water or saline (sweat) fill the valleys, the problem is mainly that the saline is even more conductive than the stem corneum. With the described capacitive measuring technique this gives a high signal for both valleys and ridges, so that it is difficult to separate the two. When converted to a digital image of the finger, the result may be a low-contrast "inverted" image where the well-conducting valley appears as "black" and the slightly less conductive ridges appear as "dark grey" at paragraph [0007]).

Regarding Claim 13 (previously presented): Nysaether teaches wherein the means of measuring an electrical quantity is a means of measuring impedance at the terminals of electrodes. ("This is obtained by a sensor as stated above and which is characterized in that it comprises a number of conductive structures at or directly below the sensor surface, said conductive structures consisting of at least one stimulation or current sink electrode and a number of sensor elements coupled to interrogation electrodes in an electronic circuit for measuring impedance between the electrodes and said at least one stimulus electrode, the sensor device also comprising at least one additional electrode being positioned in the vicinity of said sensor elements and being coupled to a chosen voltage." at paragraph [0009]).

10. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nysaether et al. (US 2005/0069178 A1) in combination Derakshani et al. "Determination of vitality form a non-invasive biomedical measurement for use in fingerprint scanners" Pattern Recognition, 36 21 December 2001, pages 383-396 and Muramatsu et al. (US 6,888,956 B2) and further in view of Lee (US 6,952,490 B2).

Regarding Claim 14:

Nysaether, Derakshani and Muramatsu in combination discloses/teaches all the claimed elements as rejected above.

Nysaether, Derakshani and Muramatsu in combination does not specifically disclose/teach electrodes are formed on a transparent plate, the connections to the electrodes being conductive and also transparent.

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Lee teaches wherein the electrodes are formed on a transparent plate, the connections to the electrodes being conductive and also transparent (Refer to Figure 1 or Figure 2, numeral 2; "...there is provided a method for fabricating a fingerprint recognizing device comprising the steps of: forming a transparent insulating layer using a transparent insulating material; forming a transparent electrode layer on the transparent insulating layer using a transparent conductive material..." at column 2, line 12).

Nysaether, Derakshani, Muramatsu and Lee are combinable because they are in the same field of sensory measurement for personal identification, specifically, fingerprint authentication.

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to formulate electrodes on a transparent plate, and the connections to the electrodes being conductive and also transparent.

All the claimed elements were known in the prior art at the time and the skilled artisan could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention. Specifically, "However, since the underlying mechanisms for static and dynamic measures are different, a combination of all these measures provides better precision than any of the individual measures." (at Section 6, "Results", Derakshani)

The suggestion/motivation for this combination would be that in general fingerprint recognizing device according to the conventional art, a fingerprint image is outputted as a gray image in a state where the ridge lines of the fingerprint are directly contacted with the surface of the light

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emitting layer. As the fingerprint image is outputted as the gray image, the fingerprint image is not clear in processing the fingerprint image using the optical fingerprint image generated from the fingerprint recognizing device, thus making the processing of the image difficult. It is, therefore, advantageous to create a fingerprint recognizing device having patterned floating electrodes and a fabricating method therefor, in the fingerprint recognizing device having a transparent insulation layer, a transparent electrode layer and a light emitting layer, by forming patterned floating electrodes on a surface of the light emitting layer, a fingerprint image generated to the fingerprint recognizing device is outputted as states of turning on/off. Refer to column 1, line 49, Lee.

Therefore, it would have been obvious to combine all the claimed elements as disclose/taught above to obtain the specific elements of claim 14.

Response to Arguments

Examiner Note

With regards to the Office Action mailed November 16, 2007, this response, if not clear in the previously mailed Office Action, the Office Action is hereby withdrawn and the Examiner will respond to the arguments/remarks regarding the revised Office Action mailed 29 January 2008.

The Revised Office Action mailed 29 January 2008 was provided to the applicant addressing the errors associated with the previous Office Action requiring new grounds of rejection and reinterpretation of the claims and the existing grounds of rejection.

Response to Arguments

11. Applicant's arguments filed 23 April 2008 have been fully considered and a complete response to those remarks is provided below.

Summary of Remarks:

A. At page 5, "The Office Action (29 Jan 08) stated that "the information disclosure statement filed 20 June 2005 fails to comply with 37 C.F.R. 198(a)..."

A supplemental information disclosure statement was filed on 19 February 2008.

Examiner's Response: Examiner accepts and enters the IDS filed on 19 February 2008.

B. At page 5, Applicant herein changes the title to "Method and Device for Determining the Living Character of a Finger Bearing a Fingerprint."

Examiner's Response: Examiner accepts and enters the new title.

C. At page 5, the specification has been amended herein to the extent the applicant understand that Examiner's objection, which is not entirely clear.

Examiner's Response: Examiner accepts and enters the amendment to the specification. It appears that claimed limitations were copied directly from the claims and inserted into the specification as a means of explaining the invention. Although the Examiner objected to the specification for reasons that eliminate legalese, the Examiner further objected to the

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specification to allow the clear interpretation of the claimed invention to be properly disclosed in the instant application.

D. At page 5, Claim 8 has been amended and applicant asserts that it now meets the requirements of 35 USC 112, first paragraph. The claim now contains one comparison step.

Examiner's Response: With respect to 35 USC 112, first paragraph rejection, the amendment has been fully considered and is persuasive. The rejection of claims 8-10 with respect to 35 U.S.C. 112, first paragraph rejection has been withdrawn.

E. At page 6, Claim 8 and 11 has been amended and applicant asserts that it now meets the requirements of 35 USC 112, second paragraph. Claims 9 and 10 are dependent upon claims 8 and claims 12-14 depend upon claim 11 and are now also acceptable.

Examiner's Response: Applicant's arguments with respect to 35 USC 112, second paragraph rejection, has been fully considered but they are not persuasive.

At claim 10, by way of example, the antecedent basis for the limitation "the impedance" at line 2 of claim 10 stands.

Additionally, at claims 8 and 11, line 1 of each claim respectively, the antecedent basis of "the living character" stands. See previous office action at page 7, last paragraph with the suggestion that the Examiner would use to correct these antecedent basis rejections.

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F. At page 9-11, "Claim 8 as best understood by the Examiner, under 35 USC 102(e) as being anticipated by Muramatsu, applicant respectfully traverses the rejection.

Examiner's Response: Applicant's arguments with respect to "35 USC 102(e) rejection as being anticipated by Muramatsu", have been considered but are moot in view of the new ground(s) of rejection.

G. At page 11, "Claims 8-13 under 35 USC 103(a) as being unpatentable over Nysaether in combination with Muramatsu, applicant respectfully traverses the rejection.

Examiner's Response: Applicant's arguments with respect to "Claims 8-13 under 35 USC 103(a) as being unpatentable over Nysaether in combination with Muramatsu, have been considered but are moot in view of the new ground(s) of rejection.

H. At page 13, The Office Action's reasons for making any of the above combinations are insufficient.

Examiner's Response: Applicant's arguments with respect to the combination of references with the reasons being insufficient, the Examiner has articulated the (a) finding that the prior art contained the specified claimed elements as best understood in view of the 35 USC 112, second paragraph rejections, additionally, the Examiner has (b) found the elements of the prior art teachings that have/had been combined are well known in the art with respect to their functions and could have been combined by known methods and performed the same functions as it/they did separately; also the Examiner has/had demonstrated a finding that (c) on of

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ordinary skill in the art would have recognized that the results of the combination of the aforementioned claimed element would have been predictable.

The referenced citations made in the rejection(s) above are intended to exemplify areas in the prior art document(s) in which the examiner believed are the most relevant to the claimed subject matter. However, it is incumbent upon the applicant to analyze the prior art document(s) in its/their entirety since other areas of the document(s) may be relied upon at a later time to substantiate examiner's rationale of record. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). However, "the prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed...." In re Fulton, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

| | | | | | |
|----|--------------|----|--------------|----|--------------|
| US | 7,181,052 B2 | US | 6,292,576 B1 | US | 7,203,345 B2 |
| US | 6,560,352 B2 | US | 6,665,428 B1 | WO | 01/24700 A1 |

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mia M. Thomas whose telephone number is (571)270-1583. The examiner can normally be reached on Monday-Thursday 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on 571-272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mia M Thomas/
Examiner, Art Unit 2624

/Vikkram Bali/
Supervisory Patent Examiner, Art Unit 2624